# DEPARTMENT OF AGRICULTURE, TRADE AND CONSUMER PROTECTION

Protecting Wisconsin's groundwater is a priority for the Department of Agriculture, Trade and Consumer Protection (DATCP). DATCP's major activities in this area include management of pesticides and nutrients, research, and funding of local soil and water resource management projects.

In compliance with Chapter 160, Wisconsin Statutes, DATCP manages pesticides and pesticide practices to ensure that established groundwater standards for contaminants are not exceeded. This may include prohibition of certain activities, including pesticide use. DATCP regulates storage, handling, use, and disposal of pesticides, as well as the storage and handling of bulk quantities of fertilizer. DATCP has authority to develop a statewide nutrient management program through section 92.05 Wis. Stats. The program includes compliance, outreach and incentives.

Enforcement standards have been established in Wisconsin for many known and potential groundwater contaminants, including over 30 pesticides. DATCP helps landowners comply with these standards and the Groundwater Law.

## FY 2022 Highlights

- Performed annual groundwater sampling of private wells in agricultural areas using a targeted sampling approach and annual sampling of field-edge monitoring wells located on or near agricultural fields.
- Received a $50,000 supplemental grant from EPA for installation of additional monitoring wells at existing field edge monitoring sites in Adams, Iowa, Sauk, and Waushara counties in 2021.
- Analyzed about 324 groundwater and 82 surface water samples for more than 100 pesticide compounds plus nitrate in 2021.
- Provided cost-sharing for the installation and implementation of 1,123 conservation practices in 2021. These practices provided soil erosion control and helped manage manure and nutrients.
- Finalized and adopted DATCP 01 Technical Standard Verification of Depth to Bedrock for use in verifying and documenting land features, particularly the depth to bedrock of cropland, specifically for the purposes of applying manure as a crop nutrient to reduce the risk of pathogen contamination in areas with Silurian dolomite in eastern Wisconsin.
- Completed the airborne electromagnetic (AEM) survey of karst bedrock features to develop updated maps that identify the 5 foot and 20 foot depth to bedrock in the Silurian dolomite area of northeast Wisconsin.
- Awarded grants to 36 producer-led groups for FY 2022 funding, totaling $1,000,000.
- Continued a project to track estimated water quality outcomes and analyze benefits of conservation adoption in 13 of the 33 Producer-Led groups.

- Awarded $258,858 in 16 Nutrient Management Farmer Education grants in 2021. These grants go to counties and technical colleges which provide nutrient management training to producers and plan writers for development of nutrient management plan in compliance with state standards.

## Details of Ongoing Activities

### Nonpoint Source Activities

### Pesticides

DATCP's primary effort related to nonpoint contamination of groundwater from pesticides includes regular sampling of private wells and monitoring wells across the state for herbicides, insecticides and nitrate. The agency uses statistically random and targeted sampling designs to compare and contrast pesticide and nitrate occurrence in private wells statewide to that found in predominantly agricultural areas. DATCP shares sample data for pesticides with well owners, EPA, counties, DNR and others to improve knowledge and awareness of pesticide contaminants in drinking water, and uses the data to inform decisions involving new policy or regulations.

One example of how DATCP uses groundwater data to ensure compliance with Chapter 160, Wisconsin Statutes, involves the herbicide atrazine. Atrazine is a corn herbicide that has been found to cause nonpoint groundwater contamination. Several revisions to Ch. 30, Wisconsin Adm. Code have been made in response to detections of atrazine in groundwater, with the latest revision being put into effect in April 2011. Maps for 101 prohibition areas are available from the Agricultural Chemical Management Bureau covering about 1.2 million acres that have been incorporated into the rule. The maps were updated with new base mapping software in 2012 to 1) update roadway names and other manmade features that have changed over the years, and 2) provide a consistent look for maps that had been created using different map software since the early 1990s. Pesticide use surveys indicate that atrazine use has declined from peak levels in the late 1980's but remains one of the top corn herbicides used. Its decline in use may be in-part a result of the atrazine management rule and concerns about groundwater contamination. Prohibition areas total about 1.2 million acres, but DATCP estimates the actual area effected by use prohibitions is less than 300,000 acres per year when non-cropland (woodland, developed land, roads, water, etc.) and cropland not used for growing corn is removed from the 1.2 million-acre land total.

### Nutrients

Through its Land and Water Resources Bureau's programs, DATCP assists in the protection of water resources through nutrient management and related conservation practice implementation. The DNR's NR 151 rule on runoff management establishes agricultural performance standards intended to protect both groundwater and surface water. DATCP identifies the practices and procedures to implement and enforce compliance with these standards, including nutrient management. The nutrient management rules apply to all Wisconsin farmers who engage in agriculture and mechanically apply nitrogen, phosphorus, or potassium (N-P-K) nutrients from manures or

commercial fertilizers to cropped fields or pastures. Under Wisconsin Statutes, cost-share funds must be made available to producers to compel compliance. However, as many as half of Wisconsin farms may comply with nutrient management standards and other performance standards without cost-sharing because they fall into one of the following categories:

- Concentrated Animal Feeding Operations (operations with 1,000 animal units or greater);
- Farms regulated by local manure storage or livestock siting ordinances; or
- Participants in Wisconsin's Farmland Preservation Program.

A Wisconsin nutrient management (NM) plan is an annually updated record that follows NRCS's 590 Nutrient Management Standard. A NM plan manages nutrient applications to ensure that crops receive the right amount of nutrients at the right time while minimizing degradation of both surface water and groundwater. A NM plan accounts for all N-P-K applied, and planned to be applied, to each field over the crop rotation, and identifies all crop management practices for each field.

The objective of the 590 NM Standard is to decrease the opportunity for nutrient losses to occur, decrease the total residual amount of nutrients in the soil and to keep those residual nutrients within the soil-crop system by limiting the processes (leaching, runoff, erosion and gaseous losses) that carry nutrients out of the system. The 590 NM Standard contains criteria for surface and groundwater protection that manages the amount and timing of all nutrient sources.

To learn more about DATCP's nutrient management program, visit: https://datcp.wi.gov/Pages/Programs_Services/NutrientManagement.aspx. For a summary of the water quality protection features of the 590 standard, visit: https://datcp.wi.gov/Documents/NM590Standard2015.pdf.

| **2021NMP Numbers** | |
|---|---|
| NM Plans Reported | 7,236 |
| NM Acres Reported | 3.23 million |
| Percent of WI Cropland Covered by NMP | 35% |
| Farmer-Written Plans | 1,663 |
| Agronomist-Written Plans | 5573 |

The DATCP allocated its annual appropriation of funds to counties through its annual allocation process. This process provides "for cost-sharing grants and contracts under the soil and water resource management program under s 92.14." In 2021, the allocation provided nearly $6 million to counties for landowner cost-sharing. This cost-sharing includes bond funds and SEG funds and supports the implementation of diverse conservation practices from manure management systems, to erosion control and nutrient management planning. The allocation also provided $258,858 in grants for farmer training (Nutrient Management Farmer Education grant program), and nearly $950,000 to support partners, including the University of Wisconsin System institutions, to enhance the

statewide infrastructure fundamental to implementing state conservation activities, with an emphasis on development of the SnapPlus nutrient management planning software.

The DATCP also provided an annual appropriation of $3,027,200 in GPR funds and $6,411,900 in SEG funds "for support of local land conservation personnel under the soil and water resource management program." DATCP would need an increase of over $3 million in its annual appropriations to reach the statutory goal of funding 3 positions at 100, 70 and 50 percent, respectively. DATCP's 2021 final allocation plan under the Soil and Water Resource Management Grant Program is summarized in Table 1 below. In most cases, the available appropriations are not able to meet the total requests of the counties for cost-sharing and staffing support.

***Table 1. Summary of Requests and Allocations for Grant Year 2021.***

| Funding Category | Total Requests | Unmet Requests | Final Allocations |
|---|---|---|---|
| County Staff/Support | $17,901,752 | $8,462,652 | $9,439,100 |
| County LWRM Cost-Share (Bond) | $7,411,250 | $3,911,250 | $3,500,000 |
| Bond Cost-Share Reserve (Bond) | $300,000 | $0 | $300,000 |
| LWRM Cost-Share (SEG) | $2,953,972 | $755,000 | $2,198,972 |
| Project Contracts (SEG) | $1,325,926 | $383,756 | $942,170 |
| NMFE Training Grants (SEG) | $288,418 | $29,560 | $258,858 |
| **Total** | **$30,181,318** | **$13,542,218** | **$16,639,100** |

DATCP nutrient management program staff train farmers, consultants and local agencies on the principles of sound nutrient management, how to comply with performance standards and how to use available tools to create and evaluate an ATCP 50-compliant nutrient management plan. DATCP also maintains a Manure Management Advisory System (MMAS), which helps farmers develop a clear understanding of field-specific soils and their ability to accept nutrients and manure for optimal crop production while protecting water quality. The system includes web-accessible tools, including: WI "590" Nutrient and Manure Application Restriction Maps, a map service for geographic information system (GIS) users, and the Runoff Risk Advisory Forecast (RRAF) model.

The RRAF provides Wisconsin's farmers with an innovative decision support tool which communicates the threat of undesirable conditions for manure and nutrient spreading for up to 10 days in advance. The system uses data outputs from the National Weather Service including snow accumulation and melt, soil moisture content and temperature and forecast precipitation to create and display maps that provide the runoff risk for a 72-hour period. The 590 Restriction maps are available statewide to assist farmers in making sound decisions about how and where to apply nutrients on their cropland. The mapped data used to create the restriction maps are also available for GIS-users to download into

their own mapping applications. All of these tools can be accessed at *http://www.manureadvisorysystem.wi.gov*.

In 2017, DNR adopted a new targeted performance standard to reduce the risk of pathogen contamination to groundwater (NR 151.075). This new standard restricts manure application in designated areas where the bedrock consists of Silurian dolomite with a depth to bedrock of 20 feet or less. DATCP is responsible for the implementation of performance standards in NR 151 and assembled a team to develop a technical standard to support the implementation of the performance standard. The team met from February 2019 through August 2020 and drafted the Wisconsin DATCP Technical Standard 01 Verification of Depth to Bedrock. This standard is a new standard to define the criteria and procedures to verify and document the depth to bedrock when a landowner wishes to contest the current categorization of cropland specifically for the purposes of applying manure as a crop nutrient. The purpose of this standard is to provide appropriate methods for verification of depth to bedrock to support implementation of s. NR 151.075 in areas where the bedrock consists of Silurian dolomite with a depth to bedrock of 20 feet or less. A final version of the technical standard was adopted in July 2021 and associated guidance is available on the DATCP website. ATCP 50 is currently being revised to adopt the technical standard into administrative code.

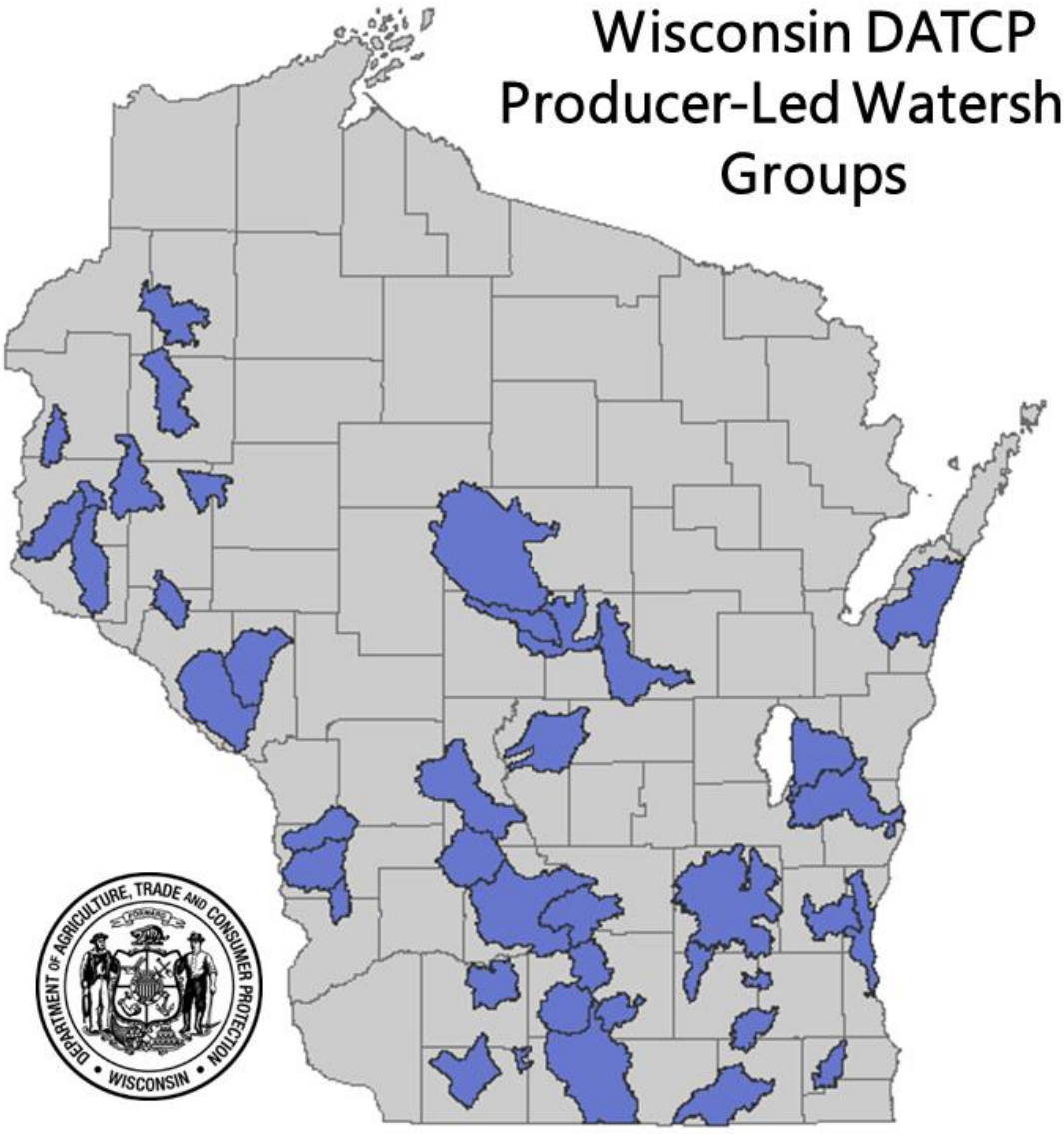
In 2020, DATCP contracted with the U.S. Geological Survey (USGS) to update depth to bedrock maps of the Silurian/Karst bedrock region of northeastern Wisconsin. Current depth to bedrock maps are based on limited data and professional judgement, often from over 40 years ago. This project collected airborne geophysical data that encompasses selected areas of interest in Northeastern Wisconsin and focuses on the 5 and 20ft depths identified in the targeted Silurian bedrock performance standard. The data was collected using airborne electromagnetics, or AEM, which is a geophysical technology originally developed for use in the mining industry to locate and map ore bodies but more recently used to map groundwater resources. This work provided accurate, belowground properties that are otherwise difficult to assess and made public vital information for local water users and managers, farmers, conservation staff and agronomic professionals to better understand their groundwater resources and aquifer systems. The Wisconsin Geologic and Natural History Survey is using the data collected as part of the AEM Survey to update existing maps.

## Program to Address Agricultural Nonpoint Contributions (ATCP 52)

Producer-Led Watershed Protection Grants are awarded by the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) to help farmers address the unique soil and water quality challenges of their local landscapes with innovative and collaborative approaches.

Producer-Led groups focus on nonpoint source abatement activities which benefit both surface and groundwater quality. The program-wide 2021 Cover Crop and No-Till Analysis shows that farmers in the program planted 83,932 acres using no-till technology — a 34% increase from 2020. This resulted in an estimated reduction of 94,125 tons of soil erosion and prevented 66,053 pounds of phosphorus loss. Cover crop implementation

followed a similar trend, with 100,440 acres planted (a 20% increase from 2020). The estimated outcomes of these improvements are a reduction of 87,919 tons of erosion and 58,081 pounds of phosphorus from leaving farm fields. More information about this project can be viewed at our website: *DATCP Home Producer-Led Tracking Project (wi.gov)*.




## Point Source Activities

Previous work by DATCP identified pesticide and fertilizer operations as possible point sources of groundwater contamination. Past problems included improper disposal of unwanted agricultural chemicals, lack of containment for spills, outdated product handling methods, and poor understanding by workers in the industry of how small actions, when continued over time, lead to large problems. DATCP has worked to address these problems through point source prevention. In cases where environmental degradation

has already occurred, DATCP oversees environmental cleanup of contaminated soil and groundwater.

Beginning in 1990, the Agricultural Clean Sweep grant program helped farmers dispose of unwanted pesticides, farm chemicals and empty pesticide containers. In 2003, DATCP also began operating and managing the state's household hazardous waste grant program and Agricultural Clean Sweep became Wisconsin Clean Sweep. In fall 2007, prescription drug collection was added to the grant and the annual program budget expanded to $1 million. In 2009 the program budget was reduced to $750,000 annually and program management reduced to 75 percent FTE.

In 2021, 82 grants were issued: 26 for agricultural waste, 37 for household hazardous waste and 19 for the collection of unwanted prescription drugs. Farmer and agricultural participation in collection events brought in slightly more than 70,000 pounds of agricultural waste in total. Farm participation can vary greatly depending on the weather or the frequency of collections within a county. Some counties hold a farm collection every other year or every few years. Farm participation for 2021 appears to be lower than the long-term average agricultural waste collected, which has historically ranged between 100,000 and 150,000 pounds collected annually. Many counties report declining collections as more farmers are using custom application and pesticides are becoming more concentrated. Much of the old stockpiled pesticides were collected during the early years of the program. However, Clean Sweeps still see old, banned or cancelled pesticides like DDT and chlordane. The added difficulties of health and safety concerns due to COVID-19 during 2021 contributed further to the decrease in collected waste as some counties made decisions to not host collection events scheduled for the early portions of the year, or entirely.

The amount of household hazardous waste collected in 2021 was about 2 million pounds, compared to 3.2 million pounds collected in 2020. This decrease in the amount of household hazardous waste collected may be attributed to some of our larger applicants (Milwaukee county for example) not hosting collection events sponsored by DATCP. The "Safer From Home" initiative implemented due to COVID-19 in 2020 gave residents the opportunity to remove hazardous waste from their homes and already disposed of the hazardous waste via 2020 Clean Sweep, resulting in less waste product to be collected in 2021. Lead and oil-based paints remain the most common waste collected from households, followed by latex paint, solvents/thinners, and pesticides/poisons as the fourth most collected waste brought in for disposal.

Wisconsin residents also turned over unwanted prescription drugs at various collection events or through permanent drug drop boxes located in law enforcement offices throughout the state Drug collections netted just over 12,000 pounds of unwanted pharmaceuticals, a decrease of about 14,000 pounds from the previous year. Again, the decrease may be due to cancelled collection events or limited disposal opportunities as a result of health and safety concerns with COVID-19. Drug collections supported by clean sweep grants are only a portion of the drug drop boxes and take back events in the state. The Wisconsin Department of Justice also coordinates and pays for the collection and

disposal of unwanted drugs. The pharmaceuticals collected through Clean Sweep projects are included in this program.

Fourteen local DATCP specialists perform compliance inspections and work with facilities across the state to help keep them in compliance with the ATCP rules designed to protect the environment. Agency staff also educates facility managers and employees about how routine practices may affect the environment.

Since 1993, the Agricultural Chemical Cleanup Program (ACCP) addresses point sources of contamination and reimburses responsible parties for a portion of cleanup costs related to pesticide and fertilizer contamination. To date, over 780 cases involving soil and/or groundwater remediation related to improper storage and handling of pesticides and fertilizers have been initiated at storage facilities. Over this same time period DATCP assisted cleanups at more than 1,350 acute agrichemical spill locations. The ACCP has received over 1,500 reimbursement applications totaling almost $49 million in reimbursement payments.

## Groundwater Sampling Surveys

DATCP manages a number of sampling programs to investigate the occurrence of pesticides in groundwater resulting from nonpoint sources. Three programs commonly used to assess drinking water quality are the annual targeted and exceedance sampling programs, and the less frequent statewide random sampling survey. DATCP also works with growers to assess water quality beneath agricultural fields by testing a network of field-edge monitoring wells at several locations across the state.

The most recent statistically random sampling survey of private wells statewide occurred in 2016. The results of the survey were published in early 2017, providing a comparison of pesticide and nitrate results to an earlier statewide random survey, published in 2008. DATCP is planning the next survey for 2023. Publications of DATCP surveys are available on the web at: *https://datcp.wi.gov/Pages/Programs_Services/GroundwaterReports.aspx*.

## Research Funding

DATCP currently funds groundwater research at about $150,000 and fertilizer research at approximately $200,000 per year, respectively. The UW coordinates groundwater research project funding through the *Wisconsin Groundwater Research and Monitoring Program*. Reports for past DATCP-funded research projects can be found in the *WGRMP Repository*.

Recently completed research projects funded by DATCP include:

- *Assessment of Pesticide Contamination in Suburban Drinking Water Wells in Southeastern Wisconsin*
- *Aerial Thermal Imaging Applied to Wisconsin's Groundwater, Springs, Thin Soils, and Slopes*
- *Integrative Monitoring of Neonicotinoid Insecticides in Baseflow-Dominated Streams on the Central Sand*

Titles of ongoing projects funded by DATCP include:

- **Sublethal Effects of Chronic Exposure to Neonicotinoid Pesticides on Aquatic Organisms**. Report anticipated October 2022.

- **Neonicotinoid Contaminants in WI Groundwater: Relationships to Landscape Cropping Systems**. Report anticipated September 2022.
- **Geophysics-informed Transport & Shallow Bedrock Topography in Northeast and Southcentral WI Counties**. Report anticipated December 2022.
- **Advancing the Use of Nitrate Findings to Inform Groundwater Protection and Improvement Strategies**. Report anticipated November 2022**On-farm Research and Local Partnership to Reduce Nitrate Loading From Agriculture in Pepin County**. Report anticipated September 2023.

In June 2022, DATCP will begin funding one new two year project to further evaluate neonicotinoid use in the Central Sands. This project, *Neonicotinoid Groundwater Leaching Potential from Potato and Management Impacts at Field Scale,* will evaluate pesticide leaching if field scale seed treatment and soil applied neonicotinoid pesticides coupled with the impacts on pesticide leading by farm management practices.

## Groundwater Data Management

DATCP maintains its groundwater data in a database that is linked to a geographic information system (GIS) web-mapping application. The system allows the user to search the database and plot maps that show data within a user-defined geographic area. The database was placed on-line in 2012. It contains contact and location information, well characteristics, and pesticide and nitrate sample results for private and public drinking water wells and combines that data with monitoring well data collected from hundreds of agricultural chemical cleanup cases. The database includes samples analyzed by DATCP, Wisconsin State Lab of Hygiene (WSLH), as well as other public and private laboratories. DATCP's groundwater database currently contains information for over 62,000 wells and nearly 800,000 pesticide and nitrate-N sample analytical results.

DATCP uses GIS tools to analyze groundwater data and prepare maps for public hearings, DATCP board meetings, presentations and other uses. DATCP prepares and maintains data in GIS of well locations, atrazine concentrations, atrazine prohibition areas and other pesticide and nitrate-N data. This database information is used to generate maps of statewide pesticide and nitrate-N detections in wells, as well as maps for chapter ATCP 30, Wis. Adm. Code (Pesticide Product Restrictions). Other GIS analyses involve identifying groundwater wells that may be impacted by point sources of pesticide and nitrate-N contamination by allowing comparisons of groundwater results with other features in GIS, such as locations of agrichemical dealership sites and spill sites that may affect groundwater quality.

**For further information:**
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